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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/686,652

10/17/2003

Yukinori Hirose

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01/11/2006

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EXAMINER

VANORE, DAVID A

ART UNIT

PAPER NUMBER

2881

DATE MAILED: 01/11/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/686,652

Applicant(s)

HIROSE, YUKINORI

Examiner

David A. Vanore

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed December 7, 2005 have been fully considered but they are not persuasive.
2. Applicant argues that a proper prima facie case of obviousness has not been established because the Kakibayashi reference does not teach the "stacking" of a plurality of 2 dimensional images to create a 3 dimensional image of a specimen.
3. The applicant's rationale for this is that thought Kakibayashi generates a plurality of 2 dimensional images and assembles these images to create a three dimensional image, as noted in Kakibayashi at Col. 4, the inclination angle of the specimen relative to the beam is different for each of the two dimensional image generated by observation of the specimen with a charged particle beam and this difference precludes the "stacking" or assembling of the 2 dimensional images in Kakibayashi to produce a three dimensional image.
4. Applicant fails to present evidence to this effect.
5. Since Kakibayashi does assemble a plurality of 2 dimensional images to create a 3 dimensional image as pointed out at least at Col. 4 and at Col. 11 lines 1-5 which recite, "The image processing constructs a 3-dimesional structure of the atomic arrangement based on projection images of atomic arrangements...", Kakibayashi does teach the required limitation for which it was relied upon in the previous Office action.
6. The rejection of claims 1-4 under 35 USC 103(a) is maintained.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grunewald in view of Kakibayashi et al. (USPN 5,552,602).

9. Grünewald teaches a crystal analyzing apparatus comprising the following as recited in the claims:

Claims 1 and 3: A crystal analyzing apparatus comprising:

- An ion beam emitting portion (1, 2)
- An electron beam emitting portion (3)
- A detecting portion for detection of a backscattered diffraction pattern (7, 8, 9)
- An analyzing portion for defining an arbitrary three-dimensional region for performing analysis (Coupled to the SEM, running analysis software, note Col. 7).

Claims 2 and 4: A crystal analyzing apparatus:

- where the apparatus analyzes and optimizes the position and orientation of the crystal relative to the ion and electron sources while analyzing the orientation of the sample (Col. 3 Line 56 through Col. 4 Line 43).

10. With respect to claims 1 and 3, Grunewald fails to explicitly teach the construction of a three dimensional data by stacking a plurality of two-dimensional data to represent a crystal orientation of a sample.

11. Kakibayashi et al. teaches a transmission electron microscope which creates a three dimensional image of a specimen by compiling a plurality of two dimensional specimen images indicating atomic arrangement, or crystalline orientation (Column 4).

12. The Grunewald device utilizes a scanning electron microscope and transmission electron microscope to create an image of the sample. Kakibayashi et al. modifies the Grunewald device by providing an image processing device and method which complies a plurality of two-dimensional images to form a three dimensional image of a specimen.

13. It would have been obvious to one having ordinary skill in the art at the time the invention was made to compile a plurality of two dimensional images into a three dimensional image in a etch monitoring device and method because the prior art process of Kakibayashi et al. makes it possible to analyze crystal face orientation, identify impure atom arrays, and identify defects in the crystalline lattice which increase the accuracy of an etch process. Note Col. 6 Lines 1-12 of Kakibayashi.

Conclusion

14. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not

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mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Vanore whose telephone number is (571) 272-2483. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David A Vanore
Patent Examiner
Art Unit 2881

dav



NIKITA WELLS
PRIMARY EXAMINER

01/06/06